

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
18 March 2004 (18.03.2004)

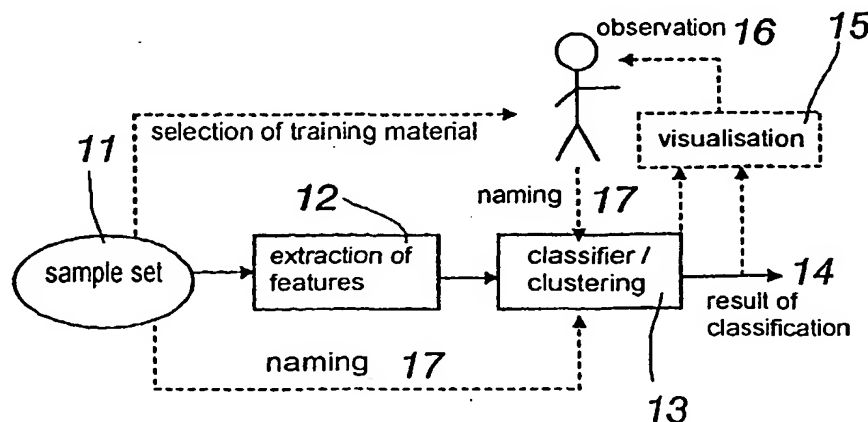
PCT

(10) International Publication Number
WO 2004/023398 A1

- (51) International Patent Classification⁷: G06T 7/40, G06N 3/08, G01N 33/34 (74) Agent: LEITZINGER OY; Tammasaarenkatu 1, FIN-00180 Helsinki (FI).
- (21) International Application Number: PCT/FI2003/000626 (81) Designated States (*national*): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT (utility model), PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (22) International Filing Date: 27 August 2003 (27.08.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 20021578 3 September 2002 (03.09.2002) FI (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- (71) Applicant (*for all designated States except US*): HONEYWELL OY [FI/FI]; Ohjelmakaari 1, FIN-40500 Jyväskylä (FI).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): TURPINEN, Markus [FI/FI]; Kalevalantie 19 B 21, FIN-90570 Oulu (FI). SILVÉN, Olli [FI/FI]; Puistokatu 9-11 C 58, FIN-90120 Oulu (FI). PIETIKÄINEN, Matti [FI/FI]; Aleksanterinkatu 10 A 11, FIN-90100 Oulu (FI). NISKANEN, Matti [FI/FI]; Kellonpellontie 10 D 15, FIN-90520 Oulu (FI). MÄENPÄÄ, Topi [FI/FI]; Mastolantie 5 B, FIN-90230 Oulu (FI).
- Published:
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: CHARACTERISATION OF PAPER

Characterisation of paper using a classifier trained in an unsupervised manner



(57) Abstract: A method and system for characterising paper, where from images of numerous paper samples are extracted multi-dimensional features describing features of the paper; the said features are entered as input into a learning classifier operating in an unsupervised manner, which produces an projection of the said data of each picture part in a low-dimension space in such a way that paper grades having close properties produce close projection in the low-dimension space and the classification results depicted in the low-dimension space are used to aid classification.

WO 2004/023398 A1